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Claims

1. A method of communication using mobile Internet protocol between a Mobile
    Node (1) and Correspondent Nodes (5, 6) in a network that also comprises a
    Home Agent (7) for the Mobile Node, said Mobile Node (1) having a plurality of
    network interfaces (2, 3) with said network, said method including per-flow
    handover management of data flows, which comprises selectively transmitting
    different data flows between said Mobile Node (1) and Correspondent Nodes
    (5, 6) over respective ones of said network interfaces (2, 3) identified by
    respective Internet addresses,

    characterised in that a plurality of Home Addresses (PH@, H@$_2$) for said
    Mobile Node (1) are registered with said Home Agent (7), respective ones of
    which are allocated dynamically to said different data flows between said
    Mobile Node (1) and Correspondent Nodes (5, 6), and respective network
    interfaces (2, 3) for said Mobile Node are allocated dynamically to said Home
    Addresses (PH@, H@$_2$), so that said different data flows between said Mobile
    Node (1) and the same Correspondent Node (5 or 6) are allocated to
    respective network interfaces (2, 3) and the allocation of network interfaces (2,
    3) may be modified dynamically.

2. A method of communication as claimed in claim 1, wherein said different data
    flows are communicated substantially simultaneously between said Mobile
    Node (1) and the same Correspondent Node (5 or 6) through said respective
    network interfaces with respective Home Addresses (PH@, H@$_2$).

3. A method of communication as claimed in claim 1 or 2, wherein Mobile Prefix
    Solicitation and Mobile Prefix Advertisement messages are exchanged
    between said Mobile Node (1) and said Home Agent (7) and said Mobile Node
    (1) uses prefixes from those messages to establish, configure, refresh and/or
    modify said respective Home Addresses (PH@, H@$_2$).

4. A method of communication as claimed in claim 3, wherein said Home Agent
    (7) performs Duplicate Address Detection on Home Addresses that said
    Mobile Node (1) establishes, configures, refreshes and/or modifies.

5. A method of communication as claimed in any preceding claim, wherein a security association exists between said Home addresses and said Home Agent (7).

6. A method of communication as claimed in any preceding claim, wherein said Mobile Node (1) performing a handover of a data flow comprises sending a Binding Update with the associated Home Address (PH@ or $H@_2$) and the IP address of the selected interface as Care-of Address (CoA_1, CoA_2) to said Home Agent (7).

7. A method of communication as claimed in any preceding claim, wherein said Mobile Node (1) performing a handover of a data flow, comprises sending a Binding Update with the associated Home Address (PH@ or $H@_2$) and the IP address of the selected interface as Care-of Address to said Correspondent Node (5 or 6).

8. A method of communication as claimed in any preceding claim, wherein said Mobile Node (1) performing a handover of a data flow includes freeing a Home Address ($H@_2$) that is no longer used for communication between said Mobile Node (1) and said Correspondent Nodes (5, 6).

9. A method of communication as claimed in claim 8, wherein said Mobile Node (1) identifies at least one of said Home Addresses (PH@) as a primary Home Address that is never freed, other Home Addresses ($H@_2$) being preferentially used for communication between said Mobile Node (1) and said Correspondent Nodes (5, 6).

10. A Mobile Node for a method of communication as claimed in any preceding claim, comprising data flow separator (18) and director (19) means for classifying at least outgoing data packets, selecting and allocating a plurality of respective network interfaces and a plurality of corresponding Home Addresses (PH@ or $H@_2$) for different data flows between said Mobile Node (1) and the same Correspondent Node (5 or 6), and modifying the allocation of network interfaces and Home Addresses (PH@, $H@_2$) dynamically.

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11. A Mobile Node as claimed in claim 10, wherein said data flow separator and director means (18, 19) comprises a Home Address table (13) identifying the current Home Addresses (PH@, H@$_2$) of the Mobile Node (1) and corresponding Care-of Addresses (CoA$_1$, CoA$_2$), and a flow mapping table (13) identifying the Correspondent Node (5, 6) associated with each current data flow and the corresponding selected Home Addresses and Care-of Addresses (CoA$_1$, CoA$_2$).

12. A Mobile Node as claimed in claim 10 or 11, wherein said data flow separator and director means (18, 19) is responsive to applications running on said Mobile Node (1) in classifying incoming and outgoing data packets.

13. A Mobile Node as claimed in any of claims 10 to 12, wherein said data flow and director separator means (18, 19) is responsive to protocol headers of incoming and outgoing data packets in classifying said data packets.

14. A Mobile Node as claimed in any of claims 10 to 13, wherein said data flow separator and director means (18, 19) comprises an interface responsive to the network operator in classifying said data packets.

15. A Mobile Node as claimed in any of claims 10 to 14, wherein said data flow separator and director means (18, 19) is responsive to applications running on said Mobile Node (1) in selecting and allocating network interfaces (2, 3) and corresponding Home Addresses (PH@, H@$_2$) for incoming and outgoing data packets.

16. A Mobile Node as claimed in any of claims 10 to 15, wherein said data flow separator and director means (18, 19) comprises an interface responsive to the network operator in selecting and allocating network interfaces (2, 3) and corresponding Home Addresses (PH@, H@$_2$) for incoming and outgoing data packets.

17. A Mobile Node as claimed in any of claims 10 to 16, wherein said data flow separator and director means (18, 19) comprises means for registering user preferences and responsive to the preferences registered in selecting and

allocating network interfaces (2, 3) and corresponding Home Addresses (PH@, $H@_2$) for incoming and outgoing data packets.